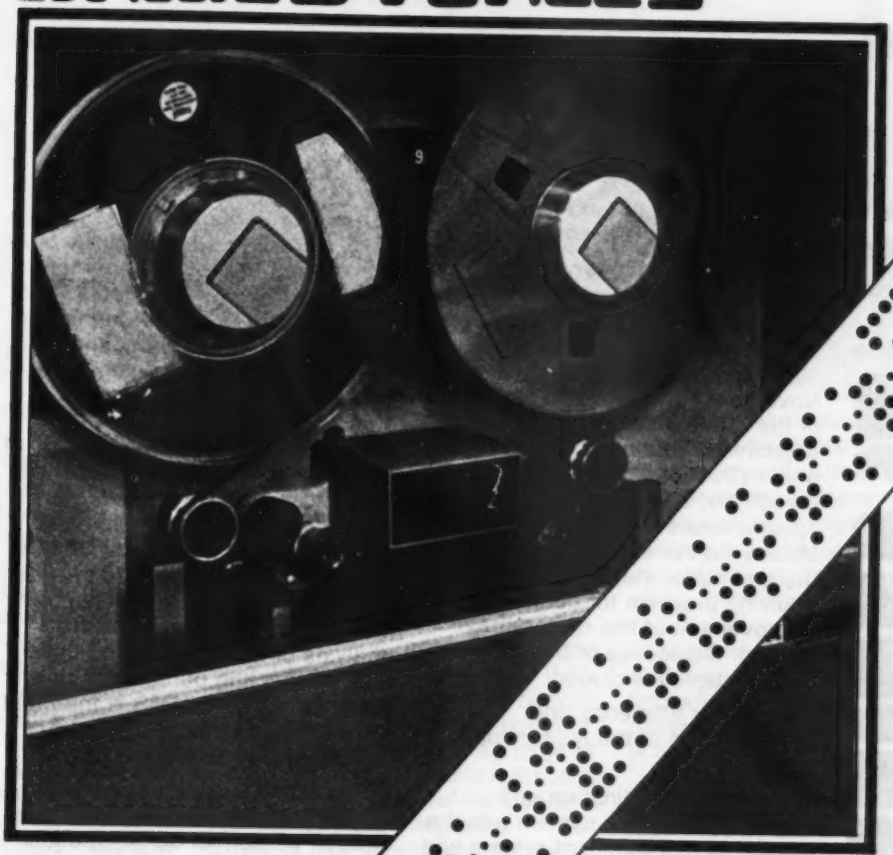
COMMANDERS DIGEST

AUTOMATED DATA PERSONNEL MANAGEMENT SYSTEMS IN THE ARMED FORCES



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MARINE CORPS

Everyone has heard of "JUMPS" and knows it is the acronym for "Joint Uniform Military Pay System."

Congress was concerned for many years over management problems of the military pay appropriations. In 1959, Congress declared that it would no longer consider requests for appropriation authority to cover over-obligations and over-expenditures until assurance was given that these deficiencies would be avoided. DoD responded by issuing a detailed directive which prescribed a management improvement program for the military personnel appropriations. Each Service was required to develop a system to insure that obligations against the military personnel appropriation would be accounted for monthly; on a basis of earned entitlements, as recorded in individual pay accounts. Obligations and disbursements were to be recorded in terms designed to assist appropriation and personnel program management. The existing manual military pay systems could not satisfy these requirements. Automation was a prerequisite.

In response to these DoD requirements, the Services initiated efforts to improve the pay and accounting systems. After earlier false starts by the Services, DoD, in November 1966, issued a statement of the JUMPS concept and its objectives. The initiating directive and instructions provided policies, objectives, and systems specifications for guidance of the Military Services. JUMPS was to be the first major step of a long-range evolving program for continuous improvement of the military pay system. Objectives of this long range program included:

- Higher efficiency and effectiveness of the military pay system.
- Closer coordination and interface of the pay system with the personnel management system and other related systems.
- A greater accuracy in payment, collection, accounting and reporting actions.
- More effective support for the management of the military personnel program and for the pay and allowances portion of the military personnel appropriation.

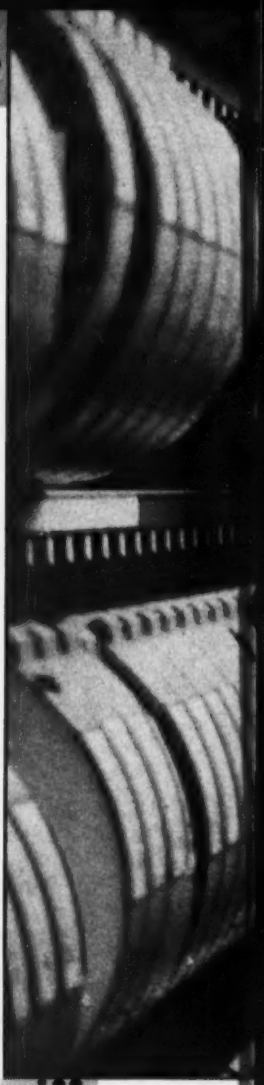
JUMPS Concept

DoD's concept of JUMPS was an automated data processing system in which master military pay accounts would be maintained at a central location for members of each Military Service. The master pay accounts would contain data on the current status of all pay allowances and entitlements including leave, allotments, and reenlistment bonuses necessary for the computation of pay. The amounts earned and amounts withheld or paid would be recorded in the master pay account as the basic pay accounting record for each individual.

Integration with MMS

JUMPS, Marine Corps, is integrated, rather than interfaced, with the Manpower Management System (MMS). This concept surpasses the DoD requirement to "interface" with the personnel management system. Instead of data exchanges between the personnel accounting and pay systems, or computer processing of one file against another to reconcile differences, JUMPS and MMS are integrated both at the source and centrally. JUMPS/MMS eliminates the need to exchange data between central pay and personnel files, and provides a broad basis for the analysis of quantitative and dollar factors affecting personnel. By any standard, JUMPS/MMS is the most sophisticated computer system developed by the Marine Corps.

The JUMPS cycle begins when events occur which are reportable through personnel administration channels. These events are



reported on unit diaries on a daily basis and sent to the local servicing Data Processing Installation (DPI). At the DPI, the diaries are scanned by optical character readers. The output is magnetic tape. The tape is then edited against a master file of magnetic records that pertain to personnel accounts of the units supported by the DPI. Those items which pass the edit are transmitted via the Automatic Digital Network (AUTODIN) to the central data bank in the Kansas City Finance Center. There items are re-edited and then posted to the integrated JUMPS/MMS central master file, wherein there is a single magnetic record per member. The transaction updates both the personnel and pay aspects of a record. For example, in the case of a promotion the grade is changed within the record and the new money rates are also generated and automatically posted. Events which are pay-unique and not input to the system via the unit diary, e.g., an allotment action, are submitted by disbursing offices on forms designed for processing by optical character recognition equipment.

The advantages of integration of JUMPS with MMS is clear. Reports drawn from the central data bank at Kansas City are integrated. Strength figures and dollars and cents appear on reports, thus providing the means for "single" reports to fulfill both the financial management function and the personnel management function.

More efficient management of the military pay appropriation is accomplished. The necessity to rely upon "after-the-fact" expenditure reports for purification of estimated obligations is eliminated. The actual status of total amounts available is immediately evident and the development of plans and programs is enhanced.

The implementation of pay raises or new compensation structures is facilitated by the availability of a centralized data bank since the central programs, once modified,

A young Marine checks magnetic storage records for scratches or other defects and a civilian pay clerk files savings bonds at the Kansas City Finance Center.

perform the computations for the entire Marine Corps population. This permits a more economical, orderly, and timely reaction to changing legislation provided there is adequate leadtime between enactment of the legislation and its effective date.

Systems Impact

The single greatest qualitative improvement is the single source automation concept for both personnel management and pay matters. It has long been recognized that there are many inconsistencies between the information contained in the vertical information systems associated with personnel reporting and the disbursing system. Although the personnel accounting system was automated, the multiple human handling and manipulation of data as it flowed up through the system generated a large amount of erroneous and doubtful data in the bank.

While feedback in the disbursing system has been faster since the record is locally maintained and correction of bad data is more readily effected, the time lapse in final audit of transactions permits continuation of errors over long periods of time. Integration and purification of personnel and pay data at a central site provides for consistency in data information. Additionally, because of the requirement for a high degree of

accuracy in personnel information for disbursing purposes, there is a new level of scrutinizing personnel information that we have not had before.

JUMPS provides numerous improvements and eliminates deficiencies in the former manual pay system. Some of these improvements are:

- Accurate computation of pay by the elimination of manual intervention and human error.
- Accurate settlement of unused leave through the integration of leave accounting with pay accounting.
- The use of common input for both pay and personnel, as well as a central data bank for pay and personnel. Common input eliminates disparities between a member's personnel record and his pay record. It introduces improved records for the individual Marine.
- The individual Marine receives a monthly statement showing the status of his pay account and leave.
- An improved data base for payment purposes in terms of timeliness and accuracy.

The same data is used for obligation and budgetary purposes and accounting processes are thus stabilized. Requirements are reduced for adjustments, interpolation of figures, and delays in our adjustments to manpower programs brought about by fund deficiencies.

Present Status

JUMPS has experienced growing pains during the first year of operation. Those commands which gave close attention to educating administrative, disbursing, and data processing personnel, in these areas, enjoyed a more tranquil transition to JUMPS than those which did not. This problem is being overcome as experience is gained through exposure to the system.

Since implementation of the net-pay subsystem on August 15, 1973, a slow but constant improvement in the accuracy of pay computations and the placement of Marines on the correct unit payroll has been realized. The Marine Corps anticipates continued improvement in this area by developing programs designed to reduce the time lag between occurence of an event affecting pay and the date the resultant adjustment is actually reflected in a pay check. A large number of needed systems modifications and refinements have also been identified and will be implemented as rapidly as manpower and data systems resources permit.

Realistically, the desired level of operating efficiency may not be reached for several months. The Marine Corps is satisfied, however, that the accomplishments to date are reasonably consistent with manpower resources, data systems support, communications capability, and the educational experience of a year in full operation. Systems analysis will continue with a view toward refinement of programs and procedures. The Navy Area Audit Service is continuing its surveillance of JUMPS/MMS to assure that it is operating in the approved design.

AIR FORCE

To many people, using computers to provide "personalized" service seems contradictory. They've read a variety of news reports highlighting so-called "computer errors," such as repeated billing of paid accounts, exorbitant dollar figures on checks, etc. In almost every case, the reports have highlighted the individual's frustration with the impersonal, arbitrary nature of the computers.

Why, then, is the Air Force, which prides itself on concern for its people, investing millions of dollars and hundreds of man-years in a computer system for personnel management? The answer to the apparent paradox is in how the computer is integrated into the personnel management process, how it is used to find solutions to "people problems," and how in the final analysis it helps "humanize" Air Force personnel management.

To understand the computer's "people" role, it's useful to look first at the personnel management system. Its blueprint, the eight volume Air Force Personnel Plan, outlines where and how our personnel management is headed. Volume I describes the process in terms of a personnel "life cycle": planning, programming, and budgeting; procurement; education and training; utilization; sustainment; and retirements/ separation. This life cycle applies to all force components—active duty military, Air National Guard (ANG), Air Force Reserves (USAFR), and civilian personnel. Within each phase of the life cycle, and for each major component, we've established specific objectives. There are over 300 of these objectives, each with its own standard for measuring progress and milestones for making progress.

TOPLINE

Active duty officer management—the TOPLINE—is the second volume of the Personnel Plan; TOPCAP—the airman objective plan—is the subject of Volume III. The Reserves and civilians are covered in Volumes IV and V. The remaining three volumes deal with planning, programming, and budgeting (Volume VI), personnel management operations (Volume VII), and the data system (Volume VIII). Reducing these broad objectives to decisions affecting the recruiting, assignment, and promotion of an individual is the function of the people managers at the Air Force Military Personnel Center (AFMPC), the major commands, and the consolidated base personnel offices (CBPOs) and centralized civilian personnel offices (CCPOs) at base level.

Another dimension of the management system is its size. The life cycle and the total force (active duty military, ANG, USAFR, and civilians) define the scope; some selected numbers hint at the magnitude. For example, there are almost 400 military and civilian base level personnel offices managing an active duty population of about 700,000 people, Guard/Reserve strength in excess of 170,000 and a

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civilian force of some 350,000 people. Each year around 100,000 new airmen must be recruited, enlisted, trained, and assigned. By the time all Weighted Airman Promotion System (WAPS) cycles for a year have been completed, over 400,000 records have been screened and 48,000 to 75,000 people selected for promotion.

Over a decade ago, we recognized that the job of managing Air Force people was too big to handle manually, and that decentralization was leading to inequities, especially in assignments and promotions. To make the process workable and equitable, we had to get "more, better, faster," exchange of information among decision points ... and do it without incurri crippling administrative wo

The solution was to begi as many decisions as reas a central point with an Air wide perspective and to e automation to transmit, st screen, and output informa Accordingly, the Air Force Personnel Center was est at Randolph Air Force Bas One of the center's first si achievements was the des development and implem the Personnel Data Syste (PDS-O) in 1963.

Hundred of man-years a 11 calendar years later, in 1974, the Advanced Perso System (APDS) was succe launched. In the interim, w

The home of Air Force personnel is the Military Personnel Center at Randolph Air Force Base, Texas.

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implemented the PDS-Airman, the Base Level Military Personnel System (BLMPS), the WAPS, and the Air Reserve Forces-BLMPS (ARF- BLMPS).

PALACE Mode

On the functional side, we've instituted the PALACE Mode—establishing a career monitor and assignments team for most Air Force officer and certain airman career areas. The majority of officer and senior non- commissioned officer (NCO) assignments are made from AFMPC. Selections for promotions to grades E–4 through E–7 are performed at AFMPC using WAPS. The Air Force worldwide locator file is produced on computer output microfilm. Annual military records checks involve a review of the print-out from the BLMPS. In short, practically every personnel management function benefits from use of the computer.

The Advanced Personnel Data System (APDS) ushers in an even broader application of computer technology, providing a common source of information and a single data network for active duty military, Air National Guard, Air Force Reserve, and, eventually, civilian personnel. The military portion of the system was the initial increment, with civilian personnel to be included by March 1975. Information will flow directly from the base level to AFMPC, over the Automatic Digital Network (AUTODIN). The major commands will receive strength accounting and duty status data from the bases, and a feedback file from the master data base at AFMPC. Data and functional interfaces between personnel and manpower and between personnel and recruiting will be expanded. To an unprecedented extent, the APDS will serve as the communications link between mission requirements and an individual's career.

Decision-making

Objectivity in decision-making is a central theme of the APDS. The challenge is how to make "the system" more objective without making it arbitrary. As the numbers above indicate, hundreds of thousands of personnel decisions must be made in any given year. There's always a temptation to make a quick and easy decision and move on to the next case—to yield to the expedient when there's pressure to be expeditious. We could have designed the APDS to do more things automatically—to have the computer select people for assignments based on a scan of their qualifications, for example; however, it doesn't necessarily follow that just because something is technically feasible, it should be done.

Rather, we've designed the system to increase the amount of time the "people managers" have to concentrate on individual "people problems." The computer is being purposely and purposefully used to humanize the personnel management process, not to dehumanize it. For example, when we use the computer to screen the data base, determine who's due for an annual or special purpose (e.g., eligible for promotion in upcoming cycle) records check, print a list of who those people are, and produce a copy of their automated records, then we've saved the personnel specialist a lot of hours, which can now be spent with those people.

When we use the computer to check enlistment quotas, school quotas, and schedules, we can offer the prospective recruit a wider range of choices and a more detailed knowledge of the future than if we allocated general quotas in bulk to the recruiters. When we use the computer to verify whether an individual meets the basic criteria for retirement, we give the retirements counsellor more time to work on any exception situations. When we use the computer to forecast job openings and assignment eligibles Air Force-wide several months to several years in advance, we give the PALACE teams a leg up on getting the right person into the right job at the right time—and give the individual who's moving maximum lead time on the reassignment action.

In summary, the impact of the computer focuses on control. The data system gives the manager and commander a better handle on the personnel resource, and gives the individual a more powerful voice in career decisions. Uncertainty breeds confusion and instability; the data system provides the information which reduces uncertainty, reduces error, and makes the entire personnel management process more orderly, accurate, stable, and equitable.

ARMY

No system supported by computers will solve all the problems in the personnel business. There has always been a heavy workload in the unit personnel office and the unit. Additional people have always had to be assigned at unit level and the military personnel office to get the job done. The Army is coming to grips with that problem but the results have not been decided.

About 14 percent of the Army's personnel system is supported manually.

About five percent of the Army is supported by Base Operating System (BASOPS), a system which has supported installations in the Continental United States (CONUS). About 23 percent of the Army is supported by Personnel Management and Accounting Card Processing System (PERMACAP) which is a system dedicated solely to personnel in tactical units. PERMACAP differs from BASOPS because BASOPS has logistics and financial management applications, which PERMACAP lacks. The Army is now phasing into a Standard Installation/Division Personnel System (SIDPERS) to be implemented Army-wide.

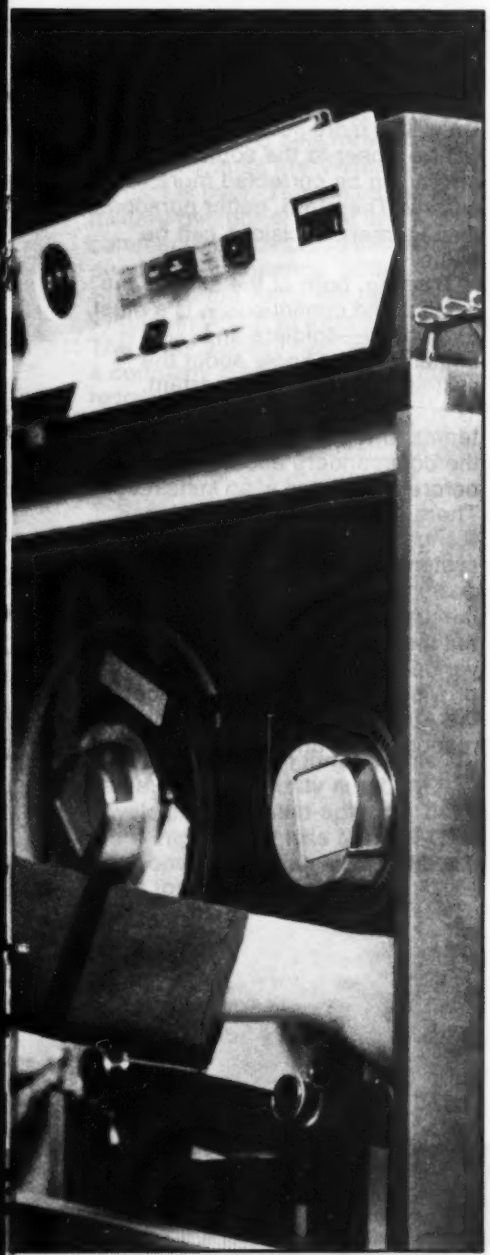
With so many different systems in the field, the Army had problems. First, it had to train personnel people in a variety of systems. That training was lost if the soldier worked under one system and then moved to another system. Furthermore, when the soldier moved—for example from a PERMACAP environment—the Army had to reconstruct some of his records. Under the manual system either the company or the military personnel office prepares the daily morning report. That morning report is mailed to the major CONUS or overseas command headquarters where it is converted to a punch card for initial entry into the automated system.

The punchcard machine is much like a typewriter; it punches holes in the card, which is then placed into AUTODIN (Automatic Digital Network) and transmitted automatically to the Military Personnel Center (MILPERCEN).

In BASOPS and PERMACAP the morning report is sent to the military personnel office, which may or may not be collocated at division or installation level. At that level the data is converted into punchcards and transmitted via AUTODIN to the major command and then on the MILPERCEN.

The Army's morning report, now being phased out, consists of two sections and is typed manually. The two sections are for strength accounting and changes that occur to the man or unit, such as reassignments, departures, etc.

Admittedly, it is very time-consuming to prepare. Furthermore, it is very difficult to check accuracy. Considerable progress has been made in eliminating this report. Effective September 1, 1974, all units supported by SIDPERS eliminated the morning report. Moreover, for those units not supported by SIDPERS, certain reporting requirements been modified. For example, ordinary leave entries are no longer required on the morning report. To make the preparation of the morning report even less complicated for those units still reporting theirs, the Army is



eliminating a number of other requirements.

Transitory Report

The information on this report is transitory in the sense that it does not provide a total transcript of the officer or enlisted man's service. Accordingly, some data on the morning report is converted to other records, such as the DA Forms 2 and 2–1 (Personnel Qualification Records).

One of the problems with the manual morning report is that essentially it is a "pull" system. This means information is transmitted from unit level up the chain of command rather than feeding back to the soldier and his commander.

The personnel data card is prepared during inprocessing and sent down to the unit when the man arrives. It contains information about the soldier and the unit clerk must post changes to the man's status to the card when submitted to the division/installation file. Army personnel systems also furnish the unit commander some rosters.

Decisions concerning a soldier's career are being made more and more frequently at Department of the Army (DA) level. This will help to insure equity for each soldier. For example, up until four or five years ago, if a man was not in the proper slot he could not be promoted. Now, however, for the top three grades the Army has centralized boards looking at the whole man concept and ascertaining whether or not he should be promoted. Similarly, decisions are being made about selections for additional schooling, such as the advance class and the Sergeants Major Academy. Also, the Army is using computers to assist in making assignments.

Army-wide Conversion

The planned system calls for Army-wide conversion to SIDPERS. Currently 61 percent of the Army is under SIDPERS. The Army will then train a clerk in only one system, rather than four. Likewise, if a soldier moves, no new records or training is required. Secondly, information will be transmitted from the division or installation level directly to MILPERCEN, with some information feedback to the major commands. The information entering the system still begins at the company level, but in a different form called a Mark Sense form.

The form requires the unit clerk to have only a pencil to pass information up the chain of command. Only limited information is required from the company. For example, is the man present? Has he arrived? Is he hospitalized? Has his duty Military Occupational Specialty (MOS) changed? In other words, duty actions which occur in the company are reported.

The forms are made out as changes occur and are sent to the SIDPERS Interface Branch at the division or installation level. There they are put into a machine which automatically types a punch card. That card is then entered into the local data base. This data base provides information about the soldier and the strength of the unit to various levels of command, including MILPERCEN. Eventually, under SIDPERS, the division or installation will report directly to Headquarters, Department of the Army.

The soldier's new record contains personnel data which is on the local data base. A copy of this record (DA Form 2) will be given to the soldier every three months. Another copy will go to his immediate commander and a third copy will be sent to his unit personnel office. A fourth copy goes to the Personnel Services NCO (PSNCO). The data on this DA Form 2 (Personnel Qualification Record – Part I) is what is maintained on the automated personnel file. Personnel must audit their records every three months and make corrections, if necessary.

Since a copy is given to the unit commander, he has much more personnel information available than he has had before. SIDPERS also provides the unit commander with many other reports pertaining to his men and his unit. For example, a promotion eligibility roster is given to the commander monthly to show which of his soldiers are eligible for promotion. The roster shows the time in grade as well as the time in service and indicates whether or not a waiver is required.

Another report shows which soldiers are due to be tested in their MOS. It shows the MOS to be tested, the month in which it is to be tested, and where it will be tested. A copy of this roster goes to the test control officer so that he can schedule the tests and requisition the study guides. This procedure should give guidance well enough in advance to make sure required personnel get at least 90 days in which to study for their test. Here again, the commander, first sergeant, and unit clerk should make sure that the roster is accurate by asking questions if a man is omitted from the roster or correcting it if something has happened to make a man ineligible for the test.

What can SIDPERS do for its people? First, it tells them each quarter what information is maintained on the automated file. They can correct it by seeing their unit clerk or calling their PSNCO.

The SIDPERS, supported system also provides information on request if the commander needs it. While there may be less clerical work in the personnel office, this does not mean that SIDPERS will necessarily save people. It will provide the personnel clerks more time to spend with soldiers in solving their personnel problems.

The personnel data maintained at DA will be more accurate because it will be closer to the source and errors can be corrected more quickly. Therefore, better personnel management decisions can be made.

Training, both at the start of the system and continuously, is a must. Everybody—soldiers and officers—must know about the system and why it's important. There are MILPERCEN training teams to teach the unit clerks and the commanders about the system before it is started at an installation. There also is a SIDPERS User Manual for all people involved in the system. This manual has been designed to answer the questions the unit clerk may have about filling out the mark sense forms using the various reports the system provides. Training, as in all facets of the Army mission, is a command responsibility and is continuous.

Too few trained people get down to the unit level and unit clerks in many cases are inexperienced. The U.S. Army Military Personnel Center's Enlisted Personnel Directorate hopes to change this in the days ahead. There is more stabilization and less movement of people because the Vietnam conflict is over. This helps the military personnel office and the company clerk because there is less personnel turbulence. With SIDPERS the Army will have one system in which to train personnel. The Army already has one MOS for a company clerk, another for the records clerk and yet another for the personnel manager who assigns people. It has to train clerks in only one MOS for assignment to a specific job.

The use of computers at DA level includes the process of putting a teletypwriter in each one of the Armed Forces Examining and Entrance Stations (AFEES). When the prospective enlistee reports there, the man in the AFEES types in certain information about the man which is fed back to MILPERCEN. This includes such items as his name, social security number, physical profile, and aptitude, but more importantly tells MILPERCEN what option the man would like to enlist for. Instantaneously, a response is furnished back to the AFEES. It tells the career counselor what courses the man is eligible for, when these courses start and other options for which the man is qualified. This system is working well and helps the soldier because if he does enlist he knows where and when he'll be going to school. It also helps the recruiter sell the man on the Army.

The annual MOS test, as well as the Enlisted Efficiency Report, is scored by a computer. The results are combined and the commander automatically gets a report on how the man did on his test, how he did on his Enlisted Efficiency Report and how he stacks up with his contemporaries. It also shows in what areas in the test the man was above or below average. This shows the man's strengths and weaknesses and hopefully will help him when he next takes the test.

In the Enlisted Personnel Directorate at MILPERCEN the computer is used to assist in making assignments. All Army-wide requirements are fed into the computer and the men available are matched against those requirements. The assignment specialist gets a roster of nominations for each job. This saves him work because he can go to the files and find out which one of the nominees is best qualified to meet the need. Data about the assignment helps many people up the chain of command in providing information about strengths, projected losses, and other requirements.

COMMANDERS DIGEST

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NAVY

In Navy JUMPS (Joint Uniformed Military Pay System) there should be two P's, one for personnel, one for pay. Navy JUMPS is not just a pay system, it is a combined pay and personnel system. A principal input to JUMPS and the source of entitlement data is the Navy's Manpower and Personnel Management Information System (MAPMIS).

MAPMIS is a complex system with many diverse inputs and outputs, serving the varied needs of the Navy in all aspects of personnel administration. In keeping with the single source reporting requirement, events which are personnel-related are reported to MAPMIS and pertinent data is then passed to the computer at Navy Finance Center (NFC). Events which are primarily pay oriented are reported to NFC which then passes personnel information to MAPMIS. There are about 40 data elements in the two data bases which are held in common and upon which the files can be reconciled. MAPMIS is the source of entitlement data for pay.

Prior to the implementation of JUMPS virtually all input to MAPMIS was via the personnel diary. The information in the personnel diary is transcribed from various source documents and is forwarded by every Navy activity to the Personnel Accounting Machine Installations (PAMI'S) where it is edited, coded and key punched. The PAMI'S then process the personnel accounting information and pass this in automated form to MAPMIS. To eliminate the transcriptions and key punch, and the errors inherent in these operations, the Navy has installed Optical Character Recognition (OCR) equipment at the Bureau of Naval Personnel (BUPERS) virtually identical to the system at NFC Cleveland. OCR is becoming the principal input to MAPMIS and therefore to JUMPS.

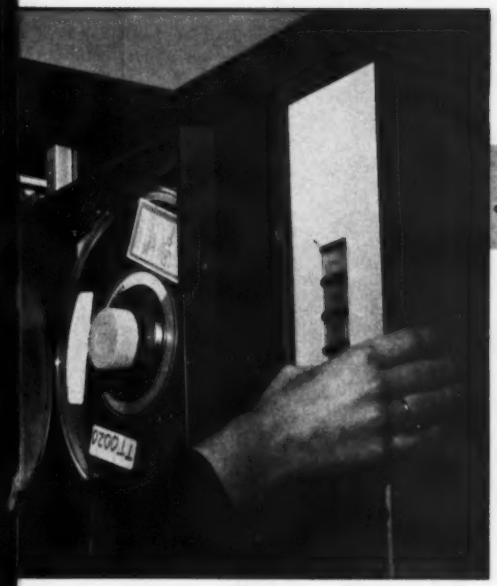
A major feature of Navy JUMPS is source data automation through OCR. An authoritative source is used for information: a contract, service record page or other legal document as the actual source of the data. These service record pages, contracts and other authoritative documents have been converted to an OCR format. The source document itself is scanned and serves as input to the automated system or systems. The original reenlistment contract is scanned. There is no transcription, no key punch required.

Magnetic Data

The audits and controls are automatically provided by the system. Magnetic data is linked to its source, the piece of flat paper, by a unique control number with appropriate audit trails and error listings provided by the system. Data validation is performed by the system. The scanner programs perform sophisticated edits on each field. Complex cross-validation between fields can be made as the document passes through the scanner. It is the best proofreader the Navy has had. When these documents were converted to OCR many JUMPS requirements were considered and included in the forms design. As a result, one document often serves both as personnel record and a copy as the disbursing voucher.

To date there are six OCR forms, prepared by offices within the Bureau of Naval Personnel. The Navy has implemented 10 field-prepared OCR forms, and prior to full JUMPS one more field form will be implemented. It is felt the greatest benefits are to be derived through the automation of existing documents via OCR. Therefore the Navy's efforts have been concentrated on automating existing service record pages. In this way it has managed to automate data and convert to OCR with a minimum of additional work-load on field activities. The new forms are clearer and less cluttered than the old forms. The accuracy and timeliness of the data has improved through OCR. The first OCR service record page was implemented in January 1970. The first efforts were through in-house prepared forms.

There was reasonably tight control for testing during the early stages of implementation. Field forms were implemented shortly thereafter with about four thousand



Navy Data Processing Technician Third Class S. McReynolds programs the tapes on a computer at the Personnel Accounting Machine Installation for the Pacific at Naval Air Station North Island, California.

different activities preparing them. These activities range from fleet tugs to nuclear powered carriers, from Naval attaches in remote areas to large commands in such areas as San Diego, Norfolk or Washington. When service record pages were simple forms interpreted by humans there was a great deal of latitude allowable in how they were prepared. Field procedures were pretty sketchy and training was a simple matter. OCR forms allow relatively little leeway in the method of preparation. The Navy has had to develop detailed preparation instructions and procedures to enable sailors stationed almost anywhere to be able to produce acceptable input to the automated system. There is probably no other OCR system which operates with such diverse imput. Navy OCR programing must accept all reasonable variations of correct input.

Detailed Feedback

Field instructions must be as clear as possible without ambiguity. There must be detailed feedback to the various preparing activities regarding their performance. Training efforts must be directed to the tens of thousands of field personnel who must use the forms now and toward incorporating the new procedures into formal courses.

There has been reduced workload and increased accuracy. Increased accuracy is an accomplished fact but reduced workload is a little slower in becoming a reality. Initially, the Navy experienced an increased workload. Workloads should be reduced, however, because each OCR form replaces at least one other form and in some cases several other forms. For example: In an enlisted advancement, one OCR service record page has replaced the old service record page entry, the personnel diary entry and the military pay order necessary to support pay record entries. An increased level of accuracy is achieved because the document that authorizes the disbursing officer to make the payments is the service record page and also the input to the automated personnel file. No longer will it be possible for a member to be receiving an item of pay on his pay record while the personnel data base is ignorant of his entitlement.

The problems experienced to date fall into three major areas: Equipment (OCR typewriters), OCR forms procurement and stocking, and the additional workload imposed through the implementation of the new system in parallel with the old system.

The key piece of equipment in Navy JUMPS is a 10 pitch carbon ribbon electric typewriter with ANS OCR A font. The OCR typewriter must be carefully maintained to insure high quality type which can be read by the scanner. The Navy is in effect making every OCR typewriter an input terminal to the computer system. Input via OCR to MAPMIS is from more than four thousand different offices or activities spread all over the world. These range from large stations in large metropolitan areas with regular typewriter maintenance to ships deployed to remote areas, mobile units in a combat zone with no maintenance and hard wear.

It is obviously impossible to closely control conditions surrounding the preparation of documents (an important factor in successful OCR operation), and yet the scanner reject rate during the past two and a half years has been less than 10 per cent for field forms. There has been a shortage of OCR typewriters for several years. Everyone wants the biggest, most expensive multiple font machine made. Then they complain that cost is prohibitive and they cannot buy enough. Many people attempt to justify the purchase or nonpurchase of an OCR typewriter on the number of hours of usage as they would justify a computer system. Some management expert will calculate: that it takes five minutes to type an OCR document, that at this

A Navy data systems technician operates equipment in the Intergrated Operational Intelligence Center on the attack aircraft carrier U.S.S. Independence.

particular command there are two hundred documents to be typed per month for a total of sixteen hours of usage per month. This then justifies the procurement of only one OCR typewriter. The fact that these two hundred documents are prepared in three different offices by seven different people at widely dispersed locations is often overlooked.

Forms Problems

The Navy's form problems have been in two major areas: procurement and printing, and stocking and distribution. OCR forms procurement is more complex and the time required for delivery is considerably longer than for a standard black and white form. The rigid printing specifications, the limited number of contractors who can or will print OCR forms to Navy specifications and normal administrative delays mean that the whole printing/procurement cycle takes about nine months. This lead time requires different and special management techniques in inventory control by the Navy Supply System. Forms distribution to four thousand different activities is yet another problem not faced by most other large OCR applications. Within the past year the Navy Supply System has learned much and has improved forms control and procurement procedures. But the lead time involved is increasing due to severe paper shortages.

The system should reduce workload in the field and yet it actually increased the workload in practice. This is due to several factors: the shortage of OCR typewriters previously mentioned and the parallel operation of the new system with the old. Naturally the parallel period must be long enough to insure the new system is at least as good as the old system and it must be as short as possible to minimize the impact of the conversion on the field. There is much resistance to change and the adequacy and quality of the OCR input system must be thoroughly tested and proven before the existing diary input can be eliminated. Therefore personnel offices have been required to prepare both OCR pages and the personnel diary input, some duplication of effort.

In July 1973 the duplication of input was eliminated. Any data element required for JUMPS is captured via OCR form into the MAPMIS. Many additional data elements not required by JUMPS but which are required by MAPMIS also are captured via the OCR service record pages and other OCR forms. As the diary entries are eliminated the hoped-for reduction in field workload is being realized.

The Navy's experience at the Bureau of Naval Personnel has indicated that OCR is a practical, viable method for input of field transactions, resulting in increased accuracy and improved timeliness of data. OCR will help make possible a personnel system of sufficient quality to support the Navy's Joint Uniform Military Pay System.

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